

What is claimed is:

Claims 1 - 8 (Canceled).

- 5 9. (Previously presented) An apparatus for generating a droplet target, comprising:
  - at least one receptacle for receiving a target liquid and adapted to have its interior maintained under high pressure;
  - an electromagnetic valve switching between open and closed states by
- 10 pulses in the range of ms;
  - means for feeding target liquid to the valve from the receptacle;
  - a supersonic nozzle;
  - an expansion channel for feeding target liquid from the valve to the nozzle;
- 15 heating means associated with the expansion channel for converting target liquid therein to supersaturated vapor by a predetermined temperature; and
  - insulating means between the electromagnetic valve and the heating means.
- 20 10. (Previously presented) The apparatus of claim 9, wherein the pressure is maintained by a non-reactive gas.
- 25 11. (Previously presented) The apparatus of claim 10, wherein the non-reactive gas is nitrogen.
12. (Previously presented) The apparatus of claim 9, wherein the predetermined temperature is about 150 °C.
- 30 13. (Previously presented) The apparatus of claim 9, wherein the duration of the pulses is 2 ms.

14. (Amended) The apparatus of claim 9, wherein the expansion channel is of a length from ~~between several~~ two mm and ~~several~~ 10 to ~~at least~~ 20 mm and of a diameter of from ~~several~~ at least 100  $\mu$ m into the range of ~~to~~ at least one mm.

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15. (Previously presented) The apparatus of claim 14, wherein the length is 15 mm and the diameter is 1 mm.

16. (Amended) The apparatus of claim 9, wherein the supersonic nozzle 10 is provided with a conical opening angle  $2\Theta$  of ~~from several degrees to several 10 degrees~~ between 2° and 20°, an input opening of ~~several~~ larger than 100  $\mu$ m in diameter and a conically shaped section of a length of ~~several~~ between 2 and 10 mm.

15 17. (Previously presented) The apparatus of claim 16, wherein the opening angle is 7°, the diameter is 500  $\mu$ m and the length of the conically shaped section is 8 mm.

18. (Amended) A method of making a droplet target, comprising the 20 steps of:

filling a receptacle with a target liquid;  
maintaining a predetermined pressure within the receptacle;  
briefly opening the receptacle by means of a pulsed electromagnetic valve;

25 feeding the target liquid through the electromagnetic valve into an expansion channel;

heating the expansion channel to a temperature sufficient to convert the target liquid into a supersaturated vapor;

feeding the supersaturated vapor to a supersonic nozzle;

30 cooling the supersaturated vapor passing to the nozzle to condense to droplets; and

discharging the droplets from the nozzle.

19. (Previously presented) The method of claim 18 wherein the pressure is maintained by gaseous nitrogen at 35 bar and the valve is pulsed at 2 ms.

5 20. (Amended) The method of claim 18, wherein the supersaturated vapor is fed to an expansion channel of a length of from ~~several~~ two mm to ~~several~~ 10 at least 20 mm and a diameter of from ~~several~~ at least 100  $\mu$ m to the range of at least one mm.

10 21. (Amended) The method of claim 18, wherein the supersaturated vapor is fed into and is cooled in a supersonic nozzle having a conical opening angle  $2\Theta$  of from ~~several degrees to several 10 degrees between 2° and 20°~~ and a conically shaped section of a length of ~~several~~ 2 to 10 mm.

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